

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application in view of the amendments and the remarks to follow. Claims 3-6, 12, 13, 17 and 21 have been amended and new claims 25-29 have been added. Claims 1-29 are pending in this application.

The amendments to the specification merely update related application data and/or correct minor informalities noted during review. No new matter is added by the amendments to the specification.

The amendment to the drawing addresses minor informalities noted during review and/or brings the drawing and specification into mutual conformance. No new matter is added by the amendment to the drawing. The Examiner's approval of the amendment to the drawing is requested. Formal drawing is enclosed herewith.

The amendments to claims 3, 4, 6, 12, 13 and 21 address minor informalities noted during review. The amendments to claims 5 and 17 merely place them in independent form by including the recitation of the base claim. The amendments to claims 3-6, 12, 13, 17 and 21 are not intended to alter the scope of the claims. No new matter is added by the amendments to claims 3-6, 12, 13, 17 and 21.

New claims 25-29 are supported at least by text appearing at p. 5, line 15 through p. 19, line 11 of the application as originally filed. No new matter is added by new claims 25-29. New claims 25-29 are similar to claim 18 et seq. but differ in scope. New claims 25-29 distinguish over the art of record and are allowable.

35 U.S.C. §112, 2ND ¶:

Claim 4 stands rejected under 35 U.S.C. §112, 2ND ¶, as being indefinite.

Claim 4 has been amended in response to the concerns noted in the Office Action.

Additionally, amendments to claims 3, 6, 12, 13 and 21 address minor informalities noted during review.

Non-Statutory Double Patenting:

Claims 1-3, 5 and 11-20 stand provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1-3, 7, 12, and 13 of co-pending and commonly-assigned U.S. Application No. 09/991,526 (Attorney Docket No. MS1-1032US). The Office Action states (p. 2) that, "Although the conflicting claims are not identical, they are not patentably distinct from each other because the applicant's claims have a one to one correspondence in limitations to the above claims found in Application No. 09/991,526."

Applicant respectfully traverses the non-statutory double patenting rejection. Applicant notes the requirements of MPEP §804, entitled "Definition of Double Patenting". Non-statutory double patenting is discussed, *inter alia*, in a subsection (B), entitled "Nonstatutory Double Patenting".

This subsection states, among other things, that:

A rejection based on nonstatutory double patenting is based on a judicially created doctrine grounded in public policy so as to prevent the unjustified or improper timewise extension of the right to exclude granted by a patent. *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969); *In re White*, 405 F.2d 904, 160 USPQ 417 (CCPA 1969); *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968); *In re Sarett*, 327 F.2d 1005, 140 USPQ 474 (CCPA 1964).

In the instant scenario, the two applications were filed on the same day. As a direct result, the public policy concerns giving rise to such grounds are not satisfied. As such, the rejection fails on a first basis to conform to the narrowly-tailored doctrine of obviousness-type non-statutory double patenting.

In a further subsection denoted (II)(B)(1), entitled "Obviousness-Type" (corresponding to the characterization of the rejection presented in the Office Action, page 2), this MPEP section states that:

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is - does any claim in the application define an invention that is merely an obvious variation of an invention claimed in the patent? If the answer is yes, then an "obviousness-type" nonstatutory double patenting rejection may be appropriate. Obviousness-type double patenting requires rejection of an application claim when the claimed subject matter is not patentably distinct from the subject matter claimed in a commonly owned patent when the issuance of a second patent would provide unjustified extension of the term of the right to exclude granted by a patent. See *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 58 USPQ2d 1865 (Fed. Cir. 2001); *Ex parte Davis*, 56 USPQ2d 1434, 1435-36 (Bd. Pat. App. & Inter. 2000).

Applicant notes that further explication of these principles and their application is provided in MPEP §804.03, entitled "Treatment of Commonly Owned Cases of Different Inventive Entities". Such is applicable in this instance because U.S. Patent Application Serial No. 09/991,526 lists Radomir Mech and Angus Dorbie as inventors, while the instant application lists Radomir Mech as inventor. The applications thus have different inventive entities.

This MPEP section also includes, as §7.21.01, entitled "Provisional Rejection, 35 U.S.C. 103(a), Common Assignee or at Least One Common Inventor", the following provisions:

For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP §§ 706.02(I)(1) (1) and 706.02(I)(2).

The instant application was filed on Nov. 21, 2001 and claims benefit of U.S. Provisional Application No. 60/252,094, filed on November 21, 2000. U.S.

Patent Application Serial No. 09/991,526 was also filed on Nov. 21, 2001 and takes priority from U.S. Provisional Application No. 60/252,092, also filed on November 21, 2000. Applicant notes the provisions of subsection II, entitled "IDENTIFYING COMMONLY OWNED CASES OR DETERMINING INVENTION PRIORITY". This subsection states that:

A determination of priority is not required when two inventions come within the provisions of 35 U.S.C. 103(c). Two inventions of different inventive entities come within the provisions of 35 U.S.C. 103(c) when:

- (A) the later invention is not anticipated by the earlier invention under 35 U.S.C. 102;
- (B) the earlier invention qualifies as prior art for purposes of obviousness under 35 U.S.C. 103 against the later invention only under subsection (f) or (g) of 35 U.S.C. 102, or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999; and
- (C) the inventions were, at the time the later invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Both applications have effective filing dates not completely inconsistent with potentially meeting criterion B. Criterion A is not asserted by the Office Action. Further explanation of criterion C is provided in subsection A, entitled "Excluding A Prior Art Reference Where Common Ownership Or Assignment Obligation Exists". This MPEP subsection states that:

In order to be disqualified as prior art under 35 U.S.C. 103(c), the subject matter that would otherwise be prior art to the claimed invention and the claimed invention must be commonly owned at the time the claimed invention was made. For applications filed prior to November 29, 1999, the subject matter that is disqualified as prior art under 35 U.S.C. 103 is strictly limited to subject matter that qualifies as prior art only under 35 U.S.C. 102(f) or 35 U.S.C. 102(g) and was commonly owned with the claimed invention at the time the claimed invention was made. For applications filed on or after November 29, 1999, the subject matter which was prior art under 35 U.S.C. 103 via 35 U.S.C. 102(e) is also disqualified as

prior art against the claimed invention if that subject matter and the claimed invention were commonly owned at the time the claimed invention was made. 35 U.S.C. 103(c) applies only to prior art usable in an obviousness rejection under 35 U.S.C. 103.

To rely upon 35 U.S.C. 103(c), a statement of common ownership must be provided in the record of the application being examined. See MPEP § 706.02(l)(1) (2) regarding evidence required to establish common ownership.

The instant application is assigned to Microsoft Corporation, One Microsoft Way, Redmond Washington and such is recorded at reel/frame 012540/0174. U.S. Patent Application Serial No. 09/991,526 is assigned to Microsoft Corporation, One Microsoft Way, Redmond Washington and such is recorded at reel/frame 012651/0342.

U.S. Patent Application Serial No. 09/991,526 takes priority from U.S. Provisional Application No. 60/252,092, filed November 21, 2000, on behalf of Silicon Graphics, Inc., of Mountain View, California. The instant application takes priority from U.S. Provisional Application No. 60/252,094, filed November 21, 2000, also on behalf of Silicon Graphics, Inc.

As such, the instant application and U.S. Patent Application Serial No. 09/991,526 were commonly owned by Silicon Graphics, Inc. at the time the invention was made. Accordingly, the double patenting rejection is in error and should be withdrawn, and claims 1-3, 5 and 11-20 should be allowed.

35 U.S.C. §102

Claims 1-13 and 15-19 are stated to stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,580,430 to Hollis et al. (hereinafter "Hollis"). Applicant traverses and requests reconsideration.

Anticipation is a legal term of art. Applicant notes that in order to provide a valid finding of anticipation, several conditions must be met: (i) the reference must include every element of the claim within the four corners of the reference (see MPEP §2121); (ii) the elements must be set forth as they are recited in the claim (see MPEP §2131); (iii) the teachings of the reference cannot be modified (see MPEP §706.02, stating that "No question of obviousness is present" in conjunction with anticipation); and (iv) the reference must enable the invention as recited in the claim (see MPEP §2121.01). Additionally, (v) these conditions must be simultaneously satisfied.

The §102 rejection of claims 1-13 and 15-19 is believed to be in error. As a first point, and in order to clarify the record, Applicant notes that claims 15-19 are dependent claims, depending from independent claim 14.

It is impossible, as a matter of law, for a dependent claim to be legitimately rejected under 35 U.S.C. §102 without a corresponding anticipation rejection of the appropriate base claim using the same reference, because a dependent claim incorporates the recitation of the base claim and any intervening claims by reference (see 35 U.S.C. §112, 4TH ¶). Accordingly, clarification of the record is requested.

Applicant notes that the body of the Office Action within the portion encompassed by the anticipation rejection (i.e., pages 5-7, items 5 and 6) includes

discussion and at least some application of art on page 7 towards the recitation of claim 14. Accordingly, Applicant assumes that claim 14 had been intended to be included in the anticipation rejection.

Additionally, the PTO and Federal Circuit provide that §102 anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). The corollary of this rule is that the absence from a cited §102 reference of any claimed element negates the anticipation. *Kloster Speedsteel AB, et al. v. Crucible, Inc., et al.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).

No §103 rejection has been lodged regarding claims 1-13 and 15-19 (or 14). Accordingly, if Applicant can demonstrate that Hollis does not disclose any one claimed element with respect to claims 1-13 and 15-19 (or, presumably, 14), the §102 rejections must be withdrawn, and a subsequent non-final action made with a different rejection in the event that the Examiner still finds such claims to be not allowable.

Applicant notes the requirements of MPEP §2131, which states that "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM." This MPEP section further states that "'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). 'The identical invention must be shown in as complete detail as is contained in the ... claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as

required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

In traversing the rejection, it is helpful to first review the teachings of the reference being applied. Hollis is directed (see, e.g., Title) to a "Method and apparatus for providing improved fog effects in a graphics system".

Hollis teaches (Abstract) "A graphics system including a custom graphics and audio processor produces exciting 2D and 3D graphics and surround sound. The system includes a graphics and audio processor including a 3D graphics pipeline and an audio digital signal processor. Improved fog simulation is provided by enabling backwards exponential and backwards exponential squared fog density functions to be used in the fog calculation. Improved exponential and exponential squared fog density functions are also provided which provide the ability to program a fog start value. A range adjustment function is used to adjust fog based on the X position of the pixels being rendered, **thereby preventing range error as the line of sight moves away from the Z axis**. An exemplary Fog Calculation Unit, as well as exemplary fog control functions and fog related registers, are also disclosed."

In contrast, claim 1 recites "A method for rendering a visual scene comprising: measuring a travel distance through a gaseous object; converting the gaseous object distance to a color component; and blending the color component of the gaseous object with a color component of a non-gaseous object to produce a pixel in the visual scene", which is neither taught nor disclosed by Hollis.

The Office Action states (page 5, item 6) that: "Referring to claim 1, Hollis discloses a method for rendering a visual scene (col. 3, line 60) comprising measuring a travel distance through a gaseous object (col. 12, line 48), converting the gaseous object distance to a color component (col. 12, lines 46-47), and blending the color component of the gaseous object with a color component of a non-gaseous object to produce a pixel in the visual scene (col. 12, lines 44-45)."

Applicant notes that these passages are drawn from different portions of Hollis (e.g., col. 3 and col. 12) and as such fail to meet the criteria (ii) and (iii) noted above for a valid finding of anticipation.

The latter passages are included in a larger passage (col. 12, line 37 et seq.) reproduced below:

Example Implementation Details

FIG. 9 shows an exemplary Fog Calculation Unit 600b which can be used to calculate fog in accordance with the instant invention. As explained in connection with FIG. 5, the Fog Calculation Unit 600b receives input from the last active stage of the Texture Environment Unit (TEV) 600a. The Fog Calculation Unit then blends a constant fog color with the pixel color output from the last active TEV stage. The percentage of fog color blended depends on the fog density, which is a function of the distance from the viewpoint to a quad.

The Texture Environment Unit is described at col. 9, line 27 et seq. This passage is reproduced below:

Texture unit 500 outputs filtered texture values to the texture environment unit 600 for texture environment processing (600a). Texture environment unit 600 blends polygon and texture color/alpha/depth, and can also perform texture fog processing (600b) to achieve inverse range based fog effects. Texture environment unit 600 can provide multiple stages to perform a variety of other interesting environment-related functions based for example on color/alpha modulation, embossing, detail texturing, texture swapping, clamping, and depth blending.

Neither col. 12, lines 46 and 47 (stating that "The Fog Calculation Unit then blends a constant fog color with the pixel color output from the last active TEV stage") nor the above passage provides "converting the gaseous object distance to a color component", as recited in claim 1. As such, the allegation that the cited portions of Hollis anticipate the recitation of claim 1 is in error. Accordingly, the anticipation rejection of claim 1 should be withdrawn, and claim 1 should be allowed.

Claim 8 recites "A graphical display system for rendering a scene, comprising: a gaseous phenomena generator, configured to (i) determine a distance traveled through a gaseous phenomenon from a reference point based upon a viewpoint of a user; (ii) convert the distance traveled to an attenuation factor; and a blending unit, configured to blend a pixel color absent gaseous phenomenon with a pixel color value of the gaseous phenomenon **based on the attenuation factor**, to render a final pixel color for a portion of the gaseous phenomenon", which is not taught or disclosed by Hollis.

As noted above with respect to claim 1, Hollis does not teach or describe any gaseous phenomena generator or blending unit configured to "blend a pixel color absent gaseous phenomenon with a pixel color value of the gaseous phenomenon based on the attenuation factor, to render a final pixel color for a portion of the gaseous phenomenon", as recited in claim 8. The Office Action provides no basis (page 6) for rejection of claim 8 other than the rejection of claim 1. As such, the anticipation rejection of claim 8 is in error and should be withdrawn, and claim 8 should be allowed.

Claim 14 recites "A method for rendering a graphical scene, comprising: determining a distance traveled through gaseous phenomena from a reference point based upon a viewpoint of a user; and applying an attenuation factor to the gaseous phenomena based the distance to produce a gaseous phenomena pixel color; and blending the gaseous phenomena pixel color with a pixel color absent the gaseous phenomena, to produce a final gaseous phenomena color pixel", which is neither taught nor disclosed by Hollis.

As noted above with reference to claim 1, Hollis does not teach or disclose "applying an attenuation factor to the gaseous phenomena based the distance to produce a gaseous phenomena pixel color" as recited in claim 14. For at least these reasons, the anticipation rejection of claim 14 is in error and should be withdrawn, and claim 14 should be allowed.

Dependent claims 2-7, 9-13 and 15-19 distinguish by virtue of dependence from claims that distinguish over the reference and for their own recited features which are not taught or shown by the cited reference. Accordingly, the anticipation rejection of claims 1-19 is in error and should be withdrawn, and claims 1-19 should be allowed.

35 U.S.C. § 103

Claims 20-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hollis. Applicant respectfully traverses and requests reconsideration.

In contrast to Hollis, claim 20 recites that "determining a travel distance value comprises: initializing the pixel color value; determining a back distance value from the reference point to the back face of the fog object and adding the back distance value to a color buffer value; and determining a front distance value from the reference point to the front face of the fog object and subtracting the front distance value from the color buffer value, wherein the final color buffer value represents a scaled travel distance through the fog object", which is not taught, disclosed, suggested or motivated by Hollis.

The Office Action states (page 7, item 8) that "Hollis discloses determining a travel distance between the front and back face of an object (fog) as shown in the rejection to claim 3 above, and the standard means for determining this distance would be to subtract the distance between the front and back points. Hollis does not discloses [sic] initializing the pixel color value, although it can be assumed that this value is at some point initialized during the calculation in Hollis."

The anticipation rejection of claim 3 references (page 5, item 6) col. 10, lines 4 and 5 of Hollis. This passage is contained within the passage (col. 9, line 59 et seq.) reproduced here:

Fog Simultaion [sic]

When fog is enabled, a constant fog color is blended with the pixel color output from the last active Texture Environment (TEV) stage.

The percentage of fog color blended depends on the fog density, which is a function of the distance from a viewpoint to a quad (2.times.2 pixels). In this example, the graphics processor 114 preferably supports five types of fog each of which provides a different fog density function.

The first fog type is the conventional linear fog as shown in FIG. 6a, wherein the fog equation provides a constant increase in fog density between a starting point where the linear fog begins and an ending point where the fog reaches its maximum value. For this conventional linear fog, the fog equation is:

$$\text{Fog} = (Z_e - Z_0) / (Z_1 - Z_0)$$

where Z_e is the eye space z of the pixel, Z_0 is the "fog start" value and is the eye-space z value at which linear fog begins or "kicks in", and Z_1 is the "fog end" value and is the eye-space z value at which the fog density reaches its maximum value. FIG. 6a shows an example graph of the linear fog equation with "fog start"=50 and "fog end"=100.

This passage is concerned with a particular form of fog, viz., linear fog.

The Office Action further states (page 7, item 8) that "At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to initialize the pixel color value." Applicant appreciates acknowledgement of patentable status of the recited subject matter but respectfully disagrees with the obviousness characterization.

Further, with respect to all of the unpatentability rejections, the Office Action fails to establish a prima facie case of obviousness. Applicant notes that criteria for such are set forth in MPEP §2143, entitled "Basic Requirements of a Prima Facie Case of Obviousness" (see also MPEP §706.02(j)).

This MPEP section states that "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to

combine reference teachings." No appropriate motivation or guidance has been identified in the references by the Office Action to modify or combine the reference disclosures.

This MPEP section also states that "Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." As noted above, the references fail to teach or suggest all of the recitations of any of the Applicant's independent claims. As such, there can be no reasonable expectation of success.

This MPEP section further states that "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." This requirement is also described in MPEP §2143.01, entitled "Suggestion or Motivation To Modify the References." This MPEP portion includes a subsection stating that "THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION".

Inasmuch as the prior art references are silent with respect to the problem to be solved, it is inconceivable that combining the teachings of the references could suggest the desirability of the claimed subject matter. As a result, the rejection fails all prongs of the test set forth in the MPEP for a *prima facie* finding of unpatentability.

Moreover, with respect to all of the unpatentability rejections, no evidence has been provided as to why it would be obvious to modify the teachings of the reference. Evidence of a suggestion to combine or modify may flow (i) from the prior art reference itself, (ii) from the knowledge of one skilled in the art or (iii)

from the nature of the problem to be solved. However, this range of sources does not diminish the requirement for actual evidence. Further, the showing must be clear and particular. See *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

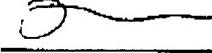
Accordingly, the rejections of claims 1-24 are in error and should be withdrawn, and claims 1-24 should be allowed.

Conclusion

Claims 1-29 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. Should any matter in this case remain unresolved, the undersigned attorney respectfully requests a telephone conference with the Examiner to resolve any such outstanding matter.

Respectfully Submitted,

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